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OBSERVATIONS

ON

STRICTURES IN THE URETHRA.

Foushee (J. H.)
AN
INAUGURAL ESSAY

ON
STRICTURES IN THE URETHRA;

SUBMITTED TO THE EXAMINATION

OF THE

REV. JOHN EWING, S. T. P. PROVOST,

THE

TRUSTEES AND MEDICAL PROFESSORS

OF THE

University of Pennsylvania,

On the sixth day of June, 1799,

FOR THE DEGREE OF DOCTOR OF MEDICINE.

BY JOHN H. FOUSHEE, OF VIRGINIA,

*Member of the Philadelphia Medical and
Chemical Societies.*

— Sed ignotis perierunt mortibus illi,
Quos venerem incertam rapientes— HOR.

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1799.

For
Mr. Scott with the best
wishes of his Friends

Wm. M. G.

TO
PHILIP SYNG PHYSICK, M. D.
PRESIDENT OF THE
ACADEMY OF MEDICINE
AT PHILADELPHIA ;

THIS ESSAY IS RESPECTFULLY INSCRIBED, IN CORDIAL
GRATITUDE FOR THE MANY VALUABLE OPPOR-
TUNITIES FOR INSTRUCTION, SO FRIENDLY
AFFORDED HIS AFFECTIONATE PUPIL

THE AUTHOR.

INTRODUCTION.

THE subject of the subsequent remarks, is not only in itself a disease of the most distressing nature, but is prodigiously heightened by the anxiety and inquietude of mind so universally attendant on all even the slightest affections of the parts in which it is seated: and tho' it is utterly out of my power, from want of experience, to advance any thing from practical observation, yet as the task of offering some medical dissertation is included as a requisite for obtaining that honor in the science of medicine which I now solicit, I trust the necessary deductions will be readily yielded for the many imperfections which shall necessarily evince themselves in the body of this essay.

It is proposed, merely to notice that species of obstruction in the Urethra, which results from strictures in that passage, for to have treated of obstructions in general would necessarily have demanded more time than is allotted to productions of the present nature in general, but more particularly so in the present instance.



OF THE STRUCTURE AND FUNCTIONS OF THE
URETHRA.

THE Urethra like most other parts of the human body is possessed of sensibility, irritability and contractility, and consequently upon the application of certain powers, is liable to take on all the changes and diseases incidental to parts thus conditioned.

It cannot be necessary for me to be arrested here to prove, that it possesses sensibility; therefore I shall proceed to establish the existence of irritability and contractility, by which I mean a certain inherent property or power, whereby it is able to diminish its capacity, and again relax to its former situation, that is in other words, to perform the offices and functions of muscles in common.

Though we cannot absolutely demonstrate muscular fibres in the internal membrane of the Urethra, yet we may here, as in other instances, be allowed to compare the actions of this, with other parts, whose structure cannot be strictly established as muscular, yet whose powers are exactly analogous. For instance, a blood vessel, even upon scrupulous examination, appears not at all similar in the arrangement of its parts to muscles; yet by an attention to its operations we shall find it capable of performing motions and actions precisely correspondent with these organs in general: Hence the reason why we find little, but most usually, no blood in the arteries after death, being driven out by the final efforts of those ves-

sels which seem to be the last retreat of departing life. And this is further exemplified by applying a ligature on one of them, whereby the propellent power of the heart is insulated with respect to that vessel (if I may be granted the expression) and we shall find that the blood contained between the ligature and extremity will be completely evacuated, which effect must incontestibly result from a power resident in the vessel itself. The same kind of action takes place also in the Urethra, when we regard the force with which the semen is driven forward and 'tis impossible to attribute its whole momentum to the simple contraction of the ejaculatores muscles. The moment that this fluid is thrown into the Urethra, it acts as a sudden stimulus upon those muscles which instantly contract and diminish the canal at that part, by which the semen is strongly embraced, and being incompressible is consequently forced into motion, which would be very materially impeded, was the remainder of the canal merely passive, as its sides are nearly collapsed in their inactive or quiescent state. However there is yet another circumstance which may claim more merit in this question, for there are cases in which the Bougie will be allowed a complete and easy introduction, and then be thrown out again by an action of the parts;—Here the whole passage must have taken on contraction as it could not possibly have resulted from the action of a small portion labouring under stricture.

It is by no means an uncommon thing for persons in perfect health, occasionally to have their urine discharged in a very small stream compared to what it is naturally, and had this diminution proceeded from a partial contraction,

at any distance within, the fluid would not have flowed forward with any strength, but would have passed interruptedly.

OF THE CAUSE AND NATURE OF STRICTURES.

AS we find that the Urethra is endowed with the principal characters and powers of a muscle, we can readily conceive it susceptible of similar affections and changes, and observation proves it not unfrequently to be attacked in like manner with spasm: This may occur and go off completely, but as motions which are once excited, are readily revived, and by frequent repetition become habitual at length, as is exemplified in innumerable instances, so may it be the case with the Urethra.

Thus a disposition to spasm or preternatural contraction in the internal membrane of the Urethra is only requisite in the first instance to the production of a stricture, for afterwards the application of very moderate irritation is quite sufficient to constitute a permanent habit after a certain time; and the oftener that stimulants are applied to parts thus situated, provided they be not capable of overcoming the contraction perfectly, the more rigid and fixed will that contraction be. For we are to make a material distinction between the simple resistance afforded by inanimate matter, and that given by organized living parts.

In a natural and healthy state of parts, the bladder when thrown into action by the stimulus of distention, is

competent to overcome the opposition of the urinary duct, which latter remains passive by reason of a necessary law of this part, and the superior power of the former. But should a diminution of the canal take place, from any cause whatever, then an additional opposition is made to the evacuation of urine whereby the bladder is compelled to assume a stronger action, in order to discharge itself; by which means the urine is propelled with increased force; this must necessarily be accompanied with considerable pressure against the contracted and resisting parts, which from their increased liability to contraction, will be thrown into stronger action or spasm—Thus the Urethra seems to oppose the expulsive power of the bladder, and the free flow of the urine is not only obstructed, but is prevented from being equal to its natural quantity.

Where this is the case, a complete evacuation can not take place, so that the inclination to discharge it, is repeated at very short intervals; to which may be added, that as motions when excited in one part to any considerable degree, are, in some instances, readily propagated or communicated, not only to contiguous, but even distant parts; so we may without difficulty suppose, that the kidneys may be brought into an irregular action, whereby a preternatural or increased secretion of urine may ensue. At length the bladder is seized with irritability, and a combination of these causes cannot fail to afford infinite distress to the patient.

From this, we clearly see that the portion of the Urethra between the stricture and the bladder must, from

the violent effects to pass urine and the resistance afforded, be considerably enlarged, and that the whole of the canal anterior to the obstruction, not being dilated to its ordinary size, and having its natural functions disturbed, must be rendered very liable to take on spasm to such a degree as to constitute a new stricture; for 'tis by no means an uncommon circumstance to discover several at the same time, where the disease has been of long duration.

Such appears to me to be the most probable manner in which strictures are produced; for it matters not in what mode or from what cause irritation proceeds, still the consequences will be the same.

It will be recollected that I do not mean to treat generally of *obstructions* in the Urethra, but merely propose to investigate the *theory and treatment of strictures*, for although their symptoms in common, are so much alike, except in pure spasmodic stricture, that they cannot be regarded as competent to distinguish the cause or nature of the impediment to the flow of urine; yet the limits necessarily prescribed to a production like the present, must preclude the possibility of entering upon so extensive a subject.

Strictures have been pretty generally considered as resulting from gonorrhœa, and the method of cure, yet Mr. John Hunter "doubts very much if it commonly or "even ever arises from these causes," alledging "That "as most men have had venereal complaints some time or "other, it is natural to ascribe the stricture to them, and "therefore it may be very difficult to refute this opinion;"

stating also that many reasons may be given against such an opinion for, “ strictures are common to most passages
 “ in the human body; they are to be found in the œso-
 “ phagus; in the intestines, especially the rectum; in the
 “ anus in the prepuce producing phymosis; in the la-
 “ chrymal duct, producing the disease called fistula la-
 “ chrymalis, where no disease had previously existed.
 “ They sometimes happen in the Urethra, where no
 “ venereal complaint had ever been.”

But with undisguised submission to the justly admired and distinguished abilities of Mr. Hunter, yet in the present instance there are reasons too stable for me to doubt with him, the *very frequent origin* of strictures from this cause.

I readily see the difficulty under which the author laboured, of disproving this opinion from the circumstance stated by him, viz. that of most men's having at some time or other had a gonorrhœa: and were there no other reasons capable of being adduced in addition to this, it would be a matter of little moment to urge it, for it alone can neither invalidate or substantiate the idea, but may, conjoined with other arguments, be at least very presumptive.

After parts of such delicate sense, as the internal membrane of the Urethra, have undergone the violent actions of inflammation, upon the cessation of this, they are necessarily left in a state of highly accumulated susceptibility to all impressions. The virulence of the gonorrhœa, may be completely subdued, yet we sometimes find

a considerable degree of irritability continue to such a degree too, that the slightest cause will produce a spasm capable of counteracting the power of the bladder, for an urgent desire to pass urine, frequently occurs in this state, and the patient is unable to relieve himself, notwithstanding his most violent efforts.

This can only take place in consequence of a loss of that relative ratio of force or power, which is essentially necessary in all parts, a combination of whose actions, is requisite to the due performance of a single process. But I do not mean, that a stricture is a *necessary* consequence of inflammation; far from it, for a state totally different from that of inflammation appears necessary to constitute this disease.

Parts under certain conditions, have different habitudes of action, whereby the same exciting cause will produce various and very dissimilar effects, as is illustrated in a multitude of instances, but in none perhaps more forcibly than in *Tetanus*. Here parts apparently in their usual and healthy states, from an injury in itself seemingly insignificant, take on a diseased action of the most alarming and distressing nature and the effect is not only totally disproportionate to the cause, but that effect even is what we would not *a priori* suspect; and on the other hand, parts of exquisite delicacy will sustain without any very material injury, most powerful agents, and hence it is that, “some have injected by mistake very irritating liquors, “such as the undiluted extract of lead, and caustic alkali, “without giving the least tendency to stricture altho’ they

“ produced violent inflammation and *even sloughing* of “ the internal membrane of the urethra”—This last quotation taken from Mr. Hunter is urged by him as demonstrative of the improbability of inflammation producing the disease in question. But this single instance is not sufficient for us to form a general conclusion from, for here no mention is made of continued irritability having succeeded to the injury, for without this condition I presume no stricture capable of occurring. Independent of this, the acrid matters are said to have produced a sloughing, and from the facts which will be presently adduced, I shall endeavour to point out, that where this effect results, the parts acted upon are not only merely altered but absolutely destroyed, and that the action is more circumscribed than that which takes place from milder stimuli; this is of material consequence, and will be made a groundwork in the cure.

In order however to balance this last instance together with some former ones mentioned by the same author, I beg leave to add, that cases of strictures have occurred from injuries done the parts—one is mentioned by Mr. Home, which was brought on a bricklayer, by a fall from the top of a chimney, and pitching upon the ridge of the house with his legs astride by which means the scrotum and perinæum were much injured. A difficulty and pain in passing urine, came on almost immediately.

So that we find inflammation absolutely capable of producing this disease, for from the nature of the injury, and contiguity of the parts, it is almost impossible but that the urethra must have suffered considerably.

An irritable condition is the frequent consequence of inflammation, and when irritation is applied to parts whose contractility is much accumulated, a preternatural or diseased contraction follows, which, when in the Urethra, constitutes stricture itself. But it is urged, that this disease happens in the urinary canal, where no venereal complaint had ever been; this is admitted without the least hesitation, for I consider the irritation which succeeds to gonorrhœa not to depend in the smallest degree upon any specific quality in the nature of the infecting cause. Nor does it differ in any degree from irritation produced by other and common means, so that this objection must necessarily fall, unless we can discover one species of irritation to differ from another, which is not the case at present, and therefore to harbour such a supposition would be to admit a multiplicity of causes to explain things exactly the same from their own obvious evidence, which we are told is absurd.

And if this reasoning be correct, it leads to a very important point, to wit, the establishment of an unity of cause. This being granted, an application of the foregoing principles, will lead us to afford a prompt solution to the last material objection of Mr. Hunter, that is, the occurrence of strictures in all the passages in the human body, though I must question the accuracy of the author's phraseology a little, when he states them to be "*common to all*," for this might imply an equal liability which observation and experience will not sanction.

In further support of this, we shall find upon investigation, a very corroborative and curious fact, that

strictures most generally proceed from lighter causes than we would be at first inclined to imagine; wherefore, those who deny the origin of this disease from gonorrhœa propose as insoluble difficulties, cases of persons, who had experienced repeated attacks of this latter, with uncommonly slight symptoms, in whom the pain never extended beyond the frænum, and yet they have been followed by strictures of the worst kind, about the bulb of the urethra: to which it may be observed, that a variety of instances are adducible, wherein impression in one part will produce action in another, but was the present a solitary case in which the effect did not correspond accurately with its cause, then it might be plead as an urgent objection; but as we have shewn that the same thing does very frequently happen, the validity of the objection must yield.

OF THE SEATS, SYMPTOMS, &c. OF STRICTURES.

FROM what has already been premised, we might consider the whole length of the urethra from the bladder to the glans penis, equally liable to be affected by stricture, and though it is so occasionally, yet there are some parts much more frequently and uniformly attacked than others.

The most common seat of strictures is about the bulbous portion; sometimes though they happen anterior to this; but seldom beyond it, and Mr. John Hunter whose labours in the investigation of this disease are per-

haps unequalled, never saw a stricture in that part of the canal which passes through the prostate gland.

If preternatural contractility be admissible as far as I have contended in the production of this disease; may not the superior liability of the bulb, arise in some measure from the muscles which, are inserted into and cover it, and upon these taking on spasm, may it not be propagated to the parts immediately adjacent. Also, if great irritability should exist through the canal generally, it may from contiguity, be communicated to these muscles whereby they may assume irregular contraction, and by reacting upon the canal, produce at length spasm and at the same time determine it to this particular part. This appears to be rendered probable, by the much more frequent occurrence of strictures in men than in women, as these latter have no muscles attached to their urethras, and which also do not seem to require any considerable degree of contractility, as this canal in them is merely appropriated to the performance of a single office, to wit, the conveying off the urine; whereas in males it has a double duty, which requires very different actions of the parts, for in the one instance the canal is passive and dilated, as in discharging urine; and in the other, it is not only contracted and active, but this action approaches very near to convulsion or spasm, as in the expulsion of semen.

The next most frequent and common seat of strictures, is about three inches from the glans penis: Sometimes we find only a single one in the whole passage, and

again there are many amounting in some cases to half a dozen, particularly when the disease has been of long standing. But the subsequent may generally be regarded as arising in consequence of the first or original one, though we must admit that several may take place at the same time, provided the necessary circumstances concur.

Besides we may observe generally, that where a patient has been long labouring under a diseased urethra and a stricture is found any where in the anterior part of the canal, we may expect to meet with another further on, and most probably about the bulb, so that the former may be viewed as a consequence of the latter. Such is the result of observation.

Sometimes a stricture is a long time in forming, during which its symptoms are so obscure as frequently to escape notice, and the first intimation of disease is given by the sudden supervention of pain and difficulty of voiding urine, by which the power of affording relief is rendered very precarious, or at least troublesome and tedious.

But when the early symptoms are noticed they are for the most part. 1. A slight diminution of the stream of urine, and some little difficulty in its passage, or it is not projected forwards with its usual power, and a small quantity will pass away in drops, whilst no exertion is making, after the main discharge is over. 2. The stimulus of distention shall produce an inclination, but from the opposition of the irritable canal, the bladder is not at first capable of itself to produce the effect, and calls in the

assistance of the abdominal muscles, yet all this will afford little or no pain or inconvenience, and unless narrowly watched would not probably be otherwise sensible to the patient. 3. Whilst the urine is passing off pretty freely, frequent and sudden stoppages happen, or it proceeds in one small, but more frequently in two or more confined or scattered streams. 4. At length the bladder even by its most powerful effects is sometimes unable to form a stream, but the urine comes away by jerks or in drops, which at one time succeed each other quickly, and again very slowly. 5. After things have continued in this state a little while, the bladder frequently becomes more or less irritable, which added to the lessened quantity of the discharge from what it naturally is, must necessarily give rise to more frequent and repeated calls to make water, but the urethra by this time has acquired such contractility at the strictured part, that it is almost capable of counteracting the combined powers of the bladder and abdominal muscles. 6. The impediment constantly gaining ground, whilst the bladder gradually by the violence of its efforts, becomes fatigued and ultimately paralyzed, complete suppression necessarily supervenes.

OF THE CURE OF SIMPLE SPASM.

AS it is of much more importance to have it in our power to discover and prevent diseases in their forming stages, than to effect a cure after they are completely

established, and particularly so in the complaint now under enquiry, a few remarks on this head may merit notice.

We have hitherto been considering that state of the parts which disposes to, and universally precedes the formation of strictures, to wit ; increased irritability and its consequent spasm. These do not differ in the least, from the same affections in other parts of the body, except in so far as depends upon the relative delicacy of the parts themselves. I have used the term *simple spasm*, to distinguish it from that which takes place in stricture, when formed ; for in this latter, the part labouring particularly under spasm is not only elevated above the common level of the Urethra, but the spasm is confined to that particular spot, whereas the present species of the disease is not more seated in one part than another, but exists alike through the whole canal frequently, though for the production of stricture it is not necessary for it to be so extensive. However, we must not calculate on being so fortunate as to discover the existence of this stage of the disease generally, for hereafter we shall find, that the patient frequently is not apprised of any affection of the Urethra, until it has progressed so far as to constitute permanent stricture. But as these premonitory symptoms may now and then occur, they will afford a probable chance of preventing those consequences which may result from them, and of relieving the anxiety of the patient, which so universally accompanies almost all, even the slightest affections of these parts.

We have said that spasm in the Urethra does not differ from the same affection in other parts, therefore the

treatment must be the same, such as rest, proper and regular diet, mild applications, &c. but particularly to avoid all such matters as may have a determinate action upon these parts ; also exposure to cold or damp weather : the lower extremities should be guarded against getting wet.

OF SPASMODIC STRICTURE.

IRRITATION to a degree sufficient to the production of stricture, may exist without affording much inconvenience, and frequently without being suspected by the patient : this irritation and its consequent spasm, at length fix themselves more particularly in some certain spot, and produce a constriction of the internal membrane of the Urethra at that part, whereby the diameter of the canal is diminished there. This contraction is not equal all around the canal in every instance, but projects more at one part than another. Sometimes it appears like a circular septum with a perforation in the centre, though this scarcely ever occurs until the disease has approached almost to permanent stricture.

I wish it to be particularly observed that a material distinction is made between spasmodic stricture strictly so called, and permanent stricture accompanied with spasm, and they are readily distinguished by this circumstance, that in the first, the obstruction, and consequent resistance to the passage of the bougie and urine is not uniformly the same as occurs in the latter, but only occasionally so, as irritation is applied so as to induce an increased action in the part.

When the disease is purely spasmodic stricture, it consists in nothing more than a constriction of some particular part of the internal and lining membrane of the urinary canal so as to form a fold which projects forwards into the passage while the parts are in action, but shortly after, this spasm subsides and the strictured portion relaxes completely, and leaves the duct of its natural capacity.

This is frequently met with in practice ; for an insuperable impediment to the introduction of the bougie will be given at one moment, which will be freely and fully received the next ; and probably after being suffered to remain for a short time, it will by its irritation on the stricture, be so firmly grasped as would require considerable force to withdraw it. After matters have arrived thus far, the disease progresses much more rapidly, and is aggravated by the most distressing symptoms, from the least irregularity whatsoever ; and there is perhaps not a more perplexing case to a surgeon than spasmodic stricture, attended with excessive irritability, and inflammation.

OF THE CURE OF SPASMODIC STRICTURE.

THE maladies to which the human body is subject are so numerous and variable, and the means of relieving them so limited, uncertain, and nugatory in a variety of instances, that whenever a remedy is found which will succeed upon a few trials, it is apt frequently to be viewed as a *specific*, and regardless of the different states

and changes which the same disease may assume, it is applied indiscriminately, without further reflection than that it has once proven serviceable and such I suspect has been the case with the bougie in the disease of stricture.— Though the introduction of this instrument into practice has been a very valuable acquisition, yet an incautious resort to it, must, in certain stages of this complaint, prove highly injurious, for if the stricture sprang originally from, and is still supported by morbid irritability, what must be the necessary consequence of applying a stimulus like this ? undoubtedly to aggravate the disease it was intended to relieve.

Application for relief in this disease is generally made during the existence of strong spasmodic action : here, admitting our disposition to use the bougie, its ready admission is not to be expected ; and it very frequently happens, that after ten or a dozen unsuccessful attempts to pass it, it is in such cases, obliged to be laid by, and recourse had to some different procedure ; and indeed this is nothing more than what we have a right to expect when we reflect that the spasm, which is the principal complaint, depends upon the irritability present and that the bougie acts wholly upon the mechanical principle of a wedge. Hence it follows, and I shall lay it down as a general rule, that whenever much irritability and disposition to spasm exist, then the bougie, as well as all other irritants are to be avoided.

The obvious indication then is to diminish this essence of the disease which is to be accomplished by such remedies as are proper for the same affections in other parts, and for this purpose the warm bath and lancet are strongly recommended by Mr. Foote, as preparatives to

the use of the bougie. But it is not advisable to be too precipitate in this last, for after the proper use of the above plan, a discharge of urine would frequently, in my opinion, have taken place without the introduction of so small an instrument as this author mentions; being of "catgut and of the size of the first string of a violin" for the passage through the stricture must have been at the first attempt as large as this small body, though its admission was refused by the spasm induced by the irritation which it caused.

But there may be, and frequently are cases where a very small bougie is absolutely necessary after the bath, &c. to produce an evacuation of urine, and this depends upon a principle already delivered, which was, that an obstruction to its flow proceeded from the excessive irritability of the Urethra, which appears to anticipate the action of the bladder and by the violence of the spasm, will yield but little to that viscus.

Here the introduction of a small body to the bladder, prevents the total and general destruction of passage in the Urethra, and suffers the urine to flow on before the rigid contraction in that canal takes place, consequently the bladder having once obtained an ascendant action it can maintain it until a complete evacuation is made.

In many instances the spasm attending this species of stricture appears to be more the cause of complaint, than the obstruction, and the strictured part retaining its power of contraction in a very eminent degree, we may readily suppose what will be the evil consequences which may in all probability result from the general use of the bougie in such cases. This instrument can act in no other

mode than merely mechanically, for the stricture will not yield as inanimate matter, but being strongly disposed to or actually labouring under spasm, the bougie must necessarily produce a stronger action of the part and aggravate the disease.

But admitting that a passage during this irritable condition was allowed to the bougie, could it be retained a sufficient length of time to make any perceptible impression upon the constricted part, for the irritation produced in this way is so great, as frequently to occasion a swelling even in the lymphatic glands of the groin.* But it is the common practice to use some force where the stricture contracts upon the point of the instrument before it has advanced as far as is wished; such a procedure appears unwarrantable when we regard the action of the part, for the bougie being grasped by it, the force employed does not simply push it on, but must necessarily stretch the stricture backwards, and endanger much injury to the contiguous parts from inflammation. Therefore upon the whole, it seems clear that the bougie can gain little or nothing, unless it does completely or very nearly destroy contractility in the diseased part, which we cannot presume will be the effect of simply introducing the point of so small a body for only a few minutes, though frequently not so long.

It is far from my intention to discourage the use of this valuable instrument; but merely to shew the principles upon which its danger rests, and the cause of that frequent failure which every practitioner must have experi-

* Mr. J. Hunter.

rienced in this disease with the bougie. In order to effect a cure it is necessary not only simply to dilate the contracted part to its usual size, but also to remove the excessive irritability, for so long as this continues, the disease is liable to return as soon almost as the pressure or distention is suspended ; which very frequently happens, and ought to do so, from the very nature of accumulated contractility.

But we have said, that in spasmodic stricture, there is little or most usually no impediment but at particular periods, so that the call for this instrument is only made during this latter case wherein it so frequently is impassable, from the existence of spasm which is more the cause of complaint than any thing else, and which if removed, would resolve the disease, as this latter never is troublesome, or rather never takes place, but in consequence of the former, so as spasm is never cured by common direct irritation, but rather aggravated, so must the treatment by pressure during such a state render the symptoms more violent.

Our objects here must therefore be, to lessen or remove the spasmodic tendency, and restore to the parts their natural motions, which is to be answered by pursuing the treatment proper to spasm in general, particularly by blisters, the warm bath, &c. and a special attention to the circumstances stated under the cure of simple general spasm. But a particular abstinence from venery in this stage, is of the utmost importance, from the nature of that action which the Urethra assumes in the expulsion of semen, as we have before noticed.

However the contraction will sometimes be so rigid, and of such duration, that there will be an absolute necessity for drawing off the urine immediately, for fear of producing an irritable state or paralysis of the bladder; and recourse must then be had to the catheter. This instrument should be composed of as mild materials, and should afford as little irritation as possible, and therefore one made of gum elastic should always be used, for there are a variety of instances recorded, where even a hollow bougie formed upon spiral wire has been obstinately refused, whilst one of the flexible gum catheters was immediately after introduced with the utmost facility on the first attempt.

It will also be necessary after the abatement of these symptoms to pass a moderate sized bougie in order to ascertain the state of the stricture, for after the part has taken on so complete a habit the obstruction will soon become permanent. Should this be the case and the foregoing circumstances not forbid, then the bougie may be used with safety and advantage, as will be noticed in the next division.

Sometimes a slight degree of resistance will be made to the instrument when introduced in cases of spasmodic stricture, after the passage is otherwise quite passive: This is the incipient stage of permanent stricture, and will pretty generally yield to the judicious application of pressure, but great caution is requisite, for fear of producing a return of spasm. So that as soon as the bougie affords the least irritation it should instantly be withdrawn, and no further attempt would be proper for that day, but mild applications together with repose should be recommended.

There is not unfrequently in this stage, a discharge from the urethra which creates an alarm to the patient suspecting it to be venereal, but, the introduction of a bougie with other circumstances will decide the case.

OF PERMANENT STRICTURE.

AFTER spasmodic stricture has continued for some time either through neglect or inadvertency, the contracted part begins gradually to loose its power of relaxation, and assumes at length a fixed and permanent nature. The strictured portion, is generally very thin at its edge, which gradually becomes indurated; and thereby seems changed in its texture—This alteration of parts sometimes extends to the whole stricture, and the resistance then afforded to the passage of urine is so great as to prevent its coming away but in drops.

In this permanent state of stricture, an obstruction is frequently not known to exist until the patient is scarcely able to void his urine, and frequently attended with a greater or less degree of strangury and other symptoms common in cases of stone or gravel, which are therefore frequently supposed to be the cause of the complaint * which can only be detected by examination of the Urethra. The stricture is attended more or less, with a disposition to spasm, and by irritation is increased to so great a degree, that the passage is entirely shut for the time of its continuance; and it is with difficulty that the end of the smallest bougie can be introduced. After the induration of the part has become complete, it acts merely as an ex-

* Hunter, 113, 4^{to}.

traneous body, and though we find a bougie will be sometimes strongly embraced, yet this is not to be attributed to irritability or spasm in the part itself, but to those immediately connected with it and which are urged into action by means of the pressure employed, and the more irritation given, the more will the stricture be increased by a new accession of parts, until a total obliteration of the urinary canal at that spot is produced.

This septum or obstruction we have said is not always equally prominent or elevated quite round the canal, and with an orifice in the centre, but sometimes is very irregular, but in other respects the appearances are the same†. In this latter case the canal must be twisted or bent out of a straight direction, and the appearance afforded by it, after death, led to a supposition, that it had been caused by the cicatrix of an ulcer in gonorrhœa, but Mr. John Hunter assures us he never found any such ulcer in all the subjects which came under his examination, who at the time of their deaths laboured under gonorrhœa.

OF THE CURE OF PERMANENT STRICTURE.

IN the first stage of a permanent stricture, that is where the callosity or hardening of the contracted portion, has not advanced far, and a bougie can be introduced, this should by all means be done, as the parts are now in a state capable of dilatation; and will in all probability remove the disease for a time at least, and sometimes effect a cure. But considerable spasm as we have noticed be-

† Home.

fore, does occasionally occur in this stage, therefore the bougie and all other like matters must be regulated by attendant circumstances.

However, notwithstanding this instrument is readily passed, affords but inconsiderable irritation or inconvenience, though worn almost constantly for years, and during its continuance keeps the disease under, yet it is a well known fact, that upon leaving off the bougie, for a longer period than two months, the stricture frequently re-establishes itself, with nearly as much violence as before, and this liability to return, is more or less in proportion as the strictured parts have changed from their natural condition and motions : The canal at all other parts is much more yielding, than at the point of stricture and particularly so, if this latter be rendered more hard and firm in its texture ; wherefore I suspect much fallacy occurs in the use of the bougie in these cases, for the diseased part at this stage possesses a power of further contraction of itself but not of relaxation—here the instrument may dilate it to the natural size of the canal; this dilatation is however principally at the expence of the marginal fibres or parts, so that the great body of the stricture still remains, though it gives but little resistance to the bougie, being removed to, or concealed in a consequent enlargement of the Urethra at that part, —that this last circumstance may happen seems more than probable by reason of the relative degree of dilatability in the parts.

After the bougie has been allowed a fair trial, and the disease does not yield, or if it does so, soon returns, then all hopes of success from this mode must be abandoned, and some other treatment adopted, and for this purpose ul-

ceration of the stricture has been advised, this is to be accomplished by inserting of a bougie or other instrument down to the part, and by pressure firmly sustained for some time, to induce inflammation, and continue it until the disease yields. There is not the smallest reason to doubt, the occasional success of this mode, but pushing on such an instrument with such a degree of force too, must be an extremely hazardous experiment, for it can be called little else, and as the stricture is sometimes not regularly equal at all parts, the point of the bougie may take a wrong direction, and form a new passage; such mischief Mr. Hunter tells us, he has seen more than once, and sometimes the bougie has been pushed so far as to make its way into the rectum.

But in addition to these objections, it happens, that the bougie with all the force we dare use, is incapable of any effect, we therefore must have recourse to some more efficacious plan. And therefore whenever the stricture will not yield to any of the above treatments, I regard the caustic as not only almost certain, but a more speedy and less painful remedy. This may appear at first, unwarrantably bold; but from the high authority of Mr. Hunter, and his kinsman Mr. Home, and the many unequivocal cures, adduced by them, in which it not only completed but even surpassed the hopes of these gentlemen, together with other considerations, it certainly demands much notice. And from experience there results a very curious fact, that whilst the bougie uniformly almost increases the irritability of the parts, the caustic on the other hand diminishes it; and this is made more obvious when we reflect on the nature of gunshot wounds, for it is a common remark, that wherever they proceed from a ball in quick motion, the injury done and inflammation which succeeds, are both

more circumscribed, and heal much more readily than when they proceed from a ball almost spent.*—The same thing happens between the effects of caustic, and those from slighter stimulants, and wherever a slough is suddenly produced, the inflammation is trifling, and completely circumscribed, and leaves little or no cicatrix, which must happen to a material degree, where ulceration by pressure is formed.

One of the most material arguments then, which is urged against this practice is, that where the canal has its direction altered, the same danger exists here as with the bougie, of forming a false passage. This though, specious as it may appear is not the case, for the caustic must touch some part of the stricture and its action is, as we observed before, not to increase the contraction, but to produce relaxation, as in a variety of cases, where the bougie could not be admitted, though attempted by skilful hands, yet little or no impediment was afforded after using the caustic once or twice; and the cure may be completed by the bougie. Caustic, when applied to a part, either overpowers its actions or destroys the part itself entirely, and as these are the effects to be desired in the cure of strictures, it would border on criminality, to neglect so important a remedy.

This practice was first adopted by Mr. Hunter, and the mode of applying the caustic has been much improved since his publication on strictures, as is stated by Dr. Home, from whom I shall quote the necessary directions for managing it. “Take a bougie of a size that can be

“ readily passed down to the stricture, and insert a small
 “ piece of lunar caustic into the end of it, letting the cauf-
 “ tic be even with the surface, but surrounded every
 “ where laterally by the substance of the bougie, this should
 “ be done some little time before it is required to be used,
 “ for the materials of which the bougie is composed, be-
 “ come warm and soft by being handled, in inserting the
 “ caustic ; and therefore the hold the bougie has of the cauf-
 “ tic, is rendered more secure after it has been allowed to
 “ cool and harden. This bougie so prepared, is to be
 “ oiled and made ready for use ; but previous to passing it
 “ a common bougie of the same size is to be introduced
 “ down to the stricture, to clear the canal, and to measure
 “ exactly the distance of the stricture from the external
 “ orifice ; This distance being marked upon the curved
 “ bougie, it is to be passed down to the stricture imme-
 “ diately upon the other being withdrawn.” In its pas-
 sage the caustic is scarcely allowed to come in contact
 with any part of the membrane, the point of the bougie,
 of which it forms the central part, always moving in the
 middle line of the canal, and indeed the quickness with
 which it is conveyed to the stricture, prevents any
 injury to the membrane where it is accidentally brought to
 oppose it.

The bougie is then to be passed in order to ascer-
 tain the state of the stricture, and should be passed daily
 for some time so as to remove all inequalities that may
 remain ; however where such irritability happens, it must
 forbid the use of this instrument until this state has subsided.

The caustic should not generally be applied oftener
 than every other day, and then for about a minute, but
 this must depend on circumstances which may vary this

But though caustic proves very generally adequate to the cure, yet it may sometimes be injurious from a peculiarity in the parts, whereby irritability may supervene, and its further use will aggravate all the symptoms —here the caustic should be laid aside, and our attention turned to the removal of this irritable condition : The most common cause of this effect of caustic, I suspect to be the presence of inflammation at the time, so that the action of the caustic is not simply confined to the part to which it is applied, but extends to the whole inflamed space.

From this view of strictures, it is not to be wondered that the constriction may become so complete as to close the passage for urine entirely, and the necessary consequence is complete suppression; and as this evacuation is so essential to the existence of the patient, it cannot be long continued without endangering life. The consequences of total obstruction are most usually a fistula in perinæo—or if this or some other outlet does not happen, the bladder not unfrequently inflames and sphacelates which must be attended with almost inevitable death; therefore we are to overcome and destroy the obstructing cause, or perforate the bladder.

To accomplish the former, when it is practicable to obtain a passage for the bougie, Mr. Hunter recommends the caustic which is certainly the best mode yet pointed out; but this requires rather more time than the urgency of the symptoms will admit.

When the stricture is seated in the straight part of the urethra, my much respected preceptor Dr. Physick has invented, and employed a lancet, concealed in a canula,

with immediate, and complete relief ; and which instrument he has very politely permitted me to mention in this place.

When the obstruction is complete, a rupture, or inflammation of the bladder might occur before a passage could be obtained by means of the caustic ; and tapping that viscus, as an operation never to be resorted to, if avoidable ; in such cases then, I hold this instrument as invaluable ; and, though the danger of using a knife in this part is seemingly great, yet the canal being straight, and the instrument incapable of taking any but the proper direction, if the operator be but cautious, those fears must subside considerably.

Admitting, though, that a false stroke should happen to be made with it, no very material evil will result, as the instrument cuts clean, the wound will readily heal ; for delicate as the urethra seems to be, yet we find instances of its supporting very powerful injuries without any damage of consequence.

But I would not limit the use of the knife totally to complete obstructions from stricture ; but it may with safety be employed in obstinate strictures in any part of the canal between the bend and glans penis.

When this instrument can be employed in the early stage of permanent stricture, particularly when attended with spasm, it is vastly preferable to the caustic, being less apt to produce that state of irritability which sometimes succeeds the use of the latter. For the loss of blood which sometimes results from the cure by caustic, is admitted

on all hands to resolve, or diminish the spasm, and consequently the disease in a great measure ; and here the superior advantage of the lancet cannot be questioned. I beg leave to subjoin the following case, which occurred in the practice of Doctor Physick, in which this instrument was used.

In the month of January, 1796, a man in climbing over a board fence, slipped and fell in such a manner, that he received a severe contusion in the perineum. A few hours after, on attempting to void urine, he experienced considerable difficulty, and observed that the stream was materially diminished in size. This inconvenience continued several days, and though it abated in some degree, it was never entirely removed. For the last four months, the difficulty in passing urine has been increasing gradually, and early in June following he applied to Doctor Physick in consequence of a complete suppression ; it was now twenty hours that he had been unable to pass a single drop, and the bladder was distended so as to be felt considerably above the pubes. An attempt was immediately made to relieve him by means of small bougie, by which it was instantly discovered that a stricture existed just at the beginning of the bend of the urethra, so closely contracted as entirely to prevent the points of these instruments from gaining the smallest admittance.

He was ordered therefore, to loose blood from his arm, to take a brisk purgative medicine, and if not relieved by the operation of them, to get into the warm bath, and to take an anodyne draught and enema. The complying with these directions necessarily took up several hours, and unfortunately, (though not unexpectedly,) the patient,

notwithstanding their use, was still unable to void a single drop of urine. Bougies, of different sizes, were again tried without any good effect.

The flattened canula, (as described in the plate,) with the lancet concealed in it, was passed down to the stricture, and held against it with some firmness, the lancet was then pushed out, by which the stricture was perforated ; an elastic catheter was now easily introduced into the bladder, by which a large quantity of water was drawn off, and the patient relieved of all his distress. The catheter was introduced to evacuate the bladder as often as necessary for three days, and then bougies were passed every day for two weeks, at the end of which time the patient appeared to be perfectly well, never having complained of any inconvenience from the operation.

The Doctor has informed me of several similar instances which have since occurred, and which were attended with equally happy results.



EXPLANATION OF THE PLATE.

Fig. 1. Represents the instrument first invented, and used by Mr. John Hunter, for conveying caustic to strictures. The port crayon carrying the bit of caustic is seen projecting beyond the canula.

Fig. 2. Represents the lancet concealed in a flatted canula, as is mentioned in page 39, for perforating strictures situated anterior to the bend of the Urethra.

It is scarcely necessary to mention that when this instrument is introduced, the point of the lancet should be completely within the canula, and not projecting as it appears in the figure.





Fig. 1.



Fig. 2.

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